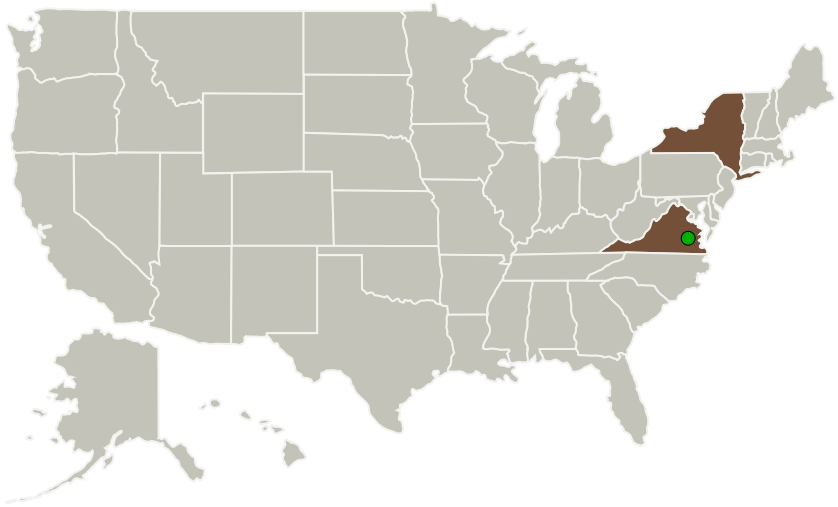
Direct Write Lightning Protection and Damage Detection, Phase I

Completed Technology Project (2014 - 2015)

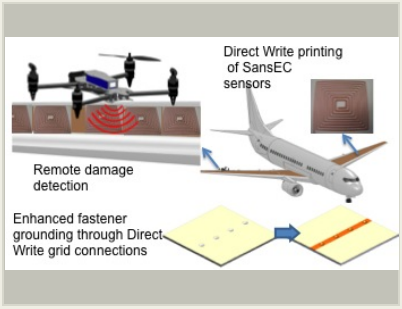
Project Introduction

This project aims to improve conventional lightning strike protection in composite aircraft and proposes a novel method to monitor structures for damage upon lightning strike. Metallic fasteners joining composite parts must be properly grounded to reduce lightning damage and fire risk. Composite panels in the most critical areas e.g., near fuel tanks, incorporate lightning strike protection (LSP), an outer ply of conductive foil to handle large currents in the event of a lightning strike. Direct Write conductor traces deposited along fastener lines will connect fasteners together, via coated countersinks. The proposed improvement will be demonstrated through Direct Effect Lightning Testing. In addition, the Company's Direct Write process will be used to print SansEC sensors onto composite materials, demonstrating an effective method of sensor integration. Open circuit resonator patterns will be used to detect cracking through shifts in resonant frequency.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
MesoScribe Technologies, Inc.	Lead Organization	Industry	Setauket, New York
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



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Primary U.S. Work Locations	
New York	Virginia

Project Transitions

June 2014: Project Start

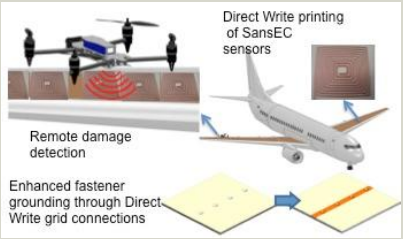
June 2015: Closed out

Closeout Summary: Direct Write Lightning Protection and Damage Detection, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/137733)*

Images



Briefing Chart Image
Direct Write Lightning Protection and Damage Detection, Phase I *(https://techport.nasa.gov/image/126503)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
MesoScribe Technologies, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

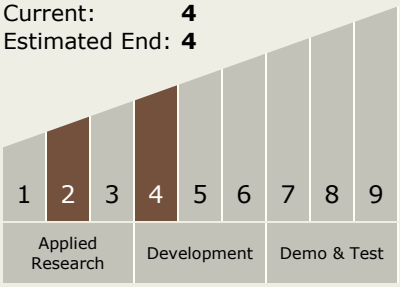
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Rob Greenlaw

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Completed Technology Project (2014 - 2015)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System